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Position Paper: Collaborative Research

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Abstract

This position paper is written on the topic of collaborative learning and how it might improve the ability of students, specifically third level students, to achieve learning outcomes within the construct of a project-based module. It is the author's position that this statement is true. The topic is be discussed in relation to two specific aspects within the topic, student motivation and achievement of learning outcomes. Collaborative learning is based in social constructivism learning theory, which says that learning is co-created in a social context by learners. This is in contrast to the transmission method of learning, typified by traditional-style lectures, which encourages students to be passive absorbers of knowledge which is then learned by rote and repeated. The collaborative space employed in the process allows the allows the formation of Vygotskty's Zone of Proximal Development (Vygotsky, 2016) wherein a student can rise above their own ability through interaction with others in a learning environment.

Collaborative learning represents an exciting tool for educators to provide students with an enriched learning environment. It is clear that peer-to-peer learning (including educators as peers) brings a level of connection and engagement with subject matter that students have not experienced with traditional-style lecture teaching. This is true for both the more and less experienced members of the group. However, to avoid student disengagement with the process, lack of motivation and failure to achieve learning objectives, it is vital that each collaborative learning event is planned carefully, without over-prescribing the material and straying into the territory of transmission theory in a group setting.

1 Introduction

This position paper is written on the topic of collaborative learning and how it might improve the ability of students, specifically third level students, to achieve learning outcomes within the construct of a project-based module. It is the author's position that this statement is true. The topic will be discussed in relation to two specific aspects within the topic, student motivation and achievement of learning outcomes. These have been chosen as the author has personally observed an apparent benefit, to learners, of collaborative learning in a project-based class, when compared with individual or solitary project-based work.

1.1 What is Collaborative Learning?

While the term collaborative learning has been defined with subtle distinction by multiple authors (Bruffee, 1999, Barkley *et al*, 2005), within the context of this position paper, collaborative learning is taken to mean working with others, in small groups, to achieve shared goals or learning outcomes. This is a relatively broad definition but is intended to include the subtle differences between collaborative and cooperative learning described by Barkley *et al* (2005) in their discussion of Bruffee's more specific distinction. This broad definition also aims to include some of the concepts discussed by Bruffee (1995) and as cited in Barkley *et al*, (2005) such as inclusion of the instructor as not only a mentor but also a co-participator in the students' creation or assimilation of new knowledge. Johnson, Johnson & Smith (1998) as cited in Barkley *et al* (2005) and Gillespie *et al* (2006), found that when well planned and executed, small-group collaboration can improve student learning over more traditional types of teaching.

1.2 Constructivism and Social Constructivism

Constructivist learning theories essentially present the theory that learning is improved through the use of inclusion and active involvement rather than simply learning by rote or repetition (Kroll & LaBoskey, 1996). The major contributors to the field of constructivist learning theory have been John Dewey, Jerome Bruner, Jean Piaget and Lev Vygotsky (UCD n.d.). While much of the study by these contributors has been based on study of children it has also since been applied to learning at third level students.

While constructivism theorises that learning is improved, in fact, that it only occurs, when the learner is *involved*, social constructivism brings a collaborative element to student learning (Kroll & LaBoskey, 1996). Vygotsky theorised that social interaction plays a crucial role in learning in addition to involvement. This learning theory is known as social constructivism (UCD, n.d., Vygotsky, 2016).

1.3 Zone of Proximal Development and linkage to Collaborative Learning

Vygotsky presents the concept of the Zone of Proximal Development (ZPD) (Vygotsky, 2016; UCD n.d.) in which a learner, with the collaboration of an educator or more experienced peer, can achieve higher learning objectives. Vygotsky describes this in terms of children's play stating that '*In play a child is always above his average age, above his daily behaviour; in play it is as though he were a head taller than himself*'' (Vygotsky, 2016). He then goes on to compare this 'play-development' relationship to the 'instruction-development' relationship and

that play does not stop as the learner ages but that the attitude of play continues through school age having its own '*inner continuation in school instruction and work*' (Vygotsky, 2016).

To explain the connection between the Zone of Proximal Development and collaborative learning in more detail, Vygotsky theorised that the ZPD was a space between the current ability of the learner and that which is beyond the ability of the learner. In this space was an area into which a learner might expand their learning with the aid or collaboration of other, more experienced persons, be they either instructors or peers (UCD n.d.) This could of course be applicable in the context of collaboration learning in which groups of students contain members with differing levels of experience with particular aspects of a problem or project. Vygotsky. Figure 1 illustrates the concept of the ZPD.

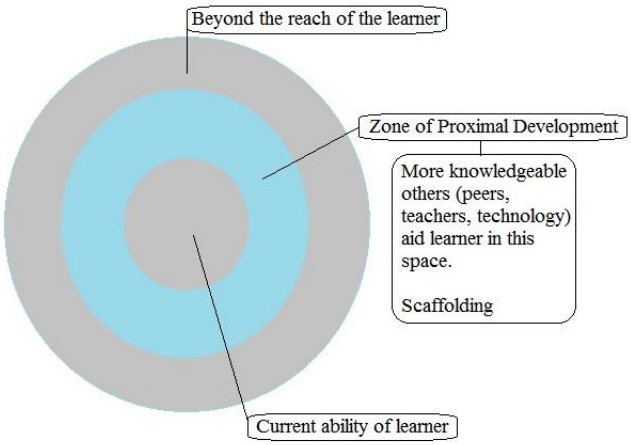

Figure 1 Vygotsky's Zone of Proximal Development (after UCD.n.d.)

One of the key elements which aid the learner within the ZPD is the concept of scaffolding, or the support which is available/offered to the learner during the learning process, to facilitate achievement of learning goals, and expansion into the ZPD (UCD n.d.). Verenikina (2003) in her paper, *Understanding Scaffolding and the ZPD in Educational Research*, discusses the variety of ways in which the concept of scaffolding has since been interpreted by the many authors who have studied and applied Vygotsky's work. She also warns, as does Stone (1998), that oversimplification of the concept can lead to prescriptive teaching which then undermines the concept of the involved learner and would then lead back to transmittal/reductionist teaching practice. In the case of third level project-based work, this could hinder true collaborative practice and potentially lead to students working side-by-side rather than together, with the teacher being the only facilitator within the ZPD, and so missing an opportunity in the classroom.

In the context of collaborative learning in project-based classes, the concept of scaffolding might be represented by the following:

- careful preparation of the brief for the learner (not overly prescriptive),
- the selection of groups members to allow varying ability levels to mix,
- a relatively 'hands-off' approach by facilitators (i.e. 'guide on the side), and

- a Socratic approach to queries by learners, encouraging reflection within the group as opposed to simply answering queries from instructor experience or knowledge.

1.4 Transmission as an alternative to Social Constructivism

The 'sage on the stage' adage describes a commonly-used alternative to constructivism as a learning theory. Known as transmission theory, this approach sees a teacher provide complete information to students which they then remember (King, 1993). Examples include traditional lecture-style classes with note taking by students, where the teacher is the one doing most if not all of the talking. Essentially this is a form of reductionism which considers learning to take place passively through imitation and repetition rather than active engagement and involvement (Kroll & LaBoskey, 1996). This circumvents the 'construction' of new knowledge through active participation that is advocated in the constructionist theory of learning (King, 1993).

The transmission method is a comfortable and familiar one for many involved in the teaching profession and as such they can be sceptical when it comes to change (Wright et al, 1998). Smyth (1996) discusses how the culture in which a teacher has been educated can influence the way they themselves teach. As the transmission method was prevalent for such a long time, it is only natural that there is a cultural resistance to change.

Moving to a social constructivist model of learning in a classroom requires relinquishing a certain amount of control as an educator. The transmission method, wherein a teacher provides information and expects a student to repeat this information, passively, individually, can mean more clarity from the perspective of the teacher, as individual student knowledge and contribution are more easily assessed (e.g. through written examination, assignments etc). In contrast, collaborative learning methods based in social constructivism require a teacher to potentially step back to allow students to formulate and construct understanding in a way which suits them. Assessment is then more a more complex task, particularly when considering individual student learning (rather than a collaborative group as a whole), and may require extra time or staff resources to adequately address (see also interview technique used by Wright *et al* (1996) in Section 3.)

In addition, the appropriate preparation of the scaffolding element of Vygotsky's ZPD could be potentially off-putting to teachers who have lecture material prepared.

MacGregor (1990), as cited in Barkley et al (2005), gives a succinct account of the roles of students in traditional (transmittal) classrooms vs collaborative (social constructivist) classrooms. Points particularly to note from those presented are that in the traditional classroom, student are more inclined to compete with each other rather than collaborate, that students do not see peers as educators, that attendance is individualistic (i.e. "no one else is relying on me so it doesn't matter if I don't show up") and as such, attendance comes with few risks in a peer-to-peer sense. This traditional style of classroom leads to less engagement, less active learning and a far less rich learning experience. This will be seen in evidence in the results of the student motivation studies mentioned in Section 2 and in the achievement of learning outcomes discussed in Section 3.

2 Impact of Collaborative Learning Construct on Student Motivation

Collaborative learning as a motivational tool for students through the construct of Vygotsky's ZPD.

Bruner, as cited in Adler *et al* (1963), describes several elements to curricula that potentially influence student motivation, e.g. student readiness and willingness to learn, preparation and presentation of material and project briefs to student in a manner which students feel able to access (e.g. context, information etc). These would also form parts of the application of the concept of the ZPD, such as readiness and scaffolding, especially when taken in the context of the variety of forms of scaffolding mentioned in Verinikina's (2003) paper mentioned above. In addition, the over-prescription or over-simplification mentioned in the same discussion paper could be said to represent reductionism, potentially reducing student motivation. This is a result discussed by Gillespie *et al* (2006), as described later.

Collaborative learning, with its basis in social constructivism, means that peers (and potentially teaching staff) work together as co-creators of learning and understanding within the construct of the material presented e.g. a class project. This means that peer-to-peer learning forms a part of the body of more knowledgeable others who participate in the ZPD. (Barkley *et al*, 2005)

Light (1992), as cited in Barkley *et al* (2005), conducted a study of students in Harvard to provide insight into what undergraduates valued most in their time there. That study determined that those students who got the most out of their undergraduate experience were those who engaged with peers and faculty "*around substantive academic work*"

Building from these two points it would not be a reach to consider that if students are made aware that when collaborative learning is run well, it provides opportunity for more robust learning experiences (as found by Johnson *et al* (1998), mentioned in Section 1) and that this could lead to an increase in motivation for students to engage in these types of activities. Particularly if this were to be linked to those graduate attributes which are sought by employers. (Jones, 1996; Black, 1994; Coleman, 1996 all cited in Campbell, Colbrook and Bjorklund, 2000).

Barkley (2005) cite a number of studies which indicate that students who participate in well-run collaborative learning sessions are more satisfied and motivated than those students who have not participated in this type of learning environment. They cite studies by Cabrera (1998) and by Fiechtner and Davis (1992) in which students were surveyed as to students' perception of personal development, analytical skills, understanding of technical subjects, effectiveness of the group-learning construct and class morale. Results of these surveys showed that there was a positive response from students on these topics. It is worth mentioning here that in the Fiechtner and Davis study (1992), a high percentage, 75-90% considered that the collaborative learning process improved class morale.

In contrast, when collaborative learning is not run well, it will impact greatly on student motivation, side-by-side working, with little co-construction and essentially proving to be a

demotivating and isolating experience (echoed by the finding of MacGregor (1998) mentioned in Section 1.5 when comparing traditional classrooms to collaborative classrooms).

Gillespie *et al* (2006) describe their experiences working with small groups of students who employ an essentially reductionist approach to their group work. They report that this resulted in student fatigue, and exasperation with colleagues they perceive as weaker or less hard working. With reference to Vygotsky's ZPD, weaker colleagues should be able to attain higher levels of learning through the aid and interaction of more experienced peers. Of course the flip side of this is that those same more experienced peers may become exasperated by the inequalities between group members and begin to disengage from the group process. (Though Barkley *et al* (2005) mentioned that there is evidence that more experienced or skilled students benefit from the requirement to 'teach' less experienced peers and this experience itself deepens knowledge for both parties). The reductionist cognitive approach described by Gillespie *et al* (2006) was brought to light in student interviews when behaviour or character traits of other group members were essentially dichotomised by students e.g. 'slacker' vs 'workhorse', 'dominant' vs 'shy', 'mature' vs 'immature'. These terms were gathered from groups that had self-determined that they did not function well. However, when researchers queried students about how they might describe groups they (the students') had observed that did function well, students were unable to comprehensively describe why those groups functioned. In short, the reductionist labelling process employed by students hindered their ability to engage fully in the collaborative process. While not directly a transmission theory issue, this does highlight the legacy present from the long history for reductionist thinking in education.

Watkins (1990), as cited in Campbell *et al* (2000), discusses how many students appreciate interactive learning experiences. This would include group work, where the opportunity to interact with peers as well as instructors or teachers exists.

Campbell *et al* (2000) also note however that in reality, collaborative learning projects are not as well presented as they need to be, leading to students entering into the process with little or no guidance on how to proceed. This may have been a source of the issues highlighted in the study by Gillespie *et al* (2006) Something important to note that was mentioned in both the studies by Campbell *et al* (2000) and Gillespie *et al* (2006) is that past group work experiences will colour a student's opinion of future group work and that this is an obstacle which may need to be overcome by an educator when presenting a new collaborative learning construct to a class.

3 Impact of Collaborative Learning on Achievement of Learning Outcomes

Wright, Millar, Kosciuk, Penberthy, Williams & Wampold (1998) conducted a study to compare traditional, reductionist teaching styles with the social constructionist approach of cooperative learning. As discussed in Section 1.1 of this paper, the distinction between collaborative and cooperative learning is a subtle one and for the purposes of this example, can be taken to be synonymous. The Wright *et al* (1998) study compared the depth and robustness of learning of students who participated in a traditional lecture-style class vs. learners who participated in a cooperative learning class. The subject group were first year Chemistry undergraduates, of which two groups were subject to the study. The first group participated in traditional lecture style classes, which encouraged questions and participation (so in this sense, there is a nod to active learning present). This method was referred to as Responsive Learning (RL). The second group was taught in a cooperative structure which "*emphasized group work and self-discovery*" as part of the course design, referred to as Structured Active Learning (SAL).

Interestingly, from an assessment perspective, it was found that the only suitable way to examine the effectiveness of the two class approaches was to interview learners orally, with interviews being conducted by staff external to those who participated in delivering the modules. As alluded to earlier, this was so that learners' depth of knowledge and understanding could be better examined.

It is worth also mentioning here that one of the motivational factors for the study by Wright *et al* (1998) was the need to provide clear evidence to sceptical faculty members that active learning in a cooperative setting is effective.

The study by Wright *et al* (1998) found that upon interview that the students who had participated in the SAL portion of the study felt themselves better able to demonstrate their learning and the interviewing staff observed superior critical-thinking skills in the SAL group. As such, it could be argued that both the students and assessing faculty observed improvement in the students' skills as a result of the SAL approach. While the learning outcomes of the particular chemistry module are not elucidated in the study, it would be practical to assume that both students and teaching staff want students to complete the module with the ability to demonstrate knowledge and critical thinking in relation to the material and the SAL cooperative approach would appear to have delivered in this particular study.

This type of assessment is obviously labour-intensive and dependent on the availability and capacity of staff who have the technical knowledge and time to commit to providing assessment. This presents a difficulty in the application of collaborative learning, how to assess individual student learning within the limits of staff capacity. It is tempting to increase the level of prescription in the scaffolding provided by teaching staff to students, particularly in the form of information briefs for project-based classes, as this can aid in assessment of levels of achievement of learning outcomes (and therefore summative results). However, this would run counter to the full development of the ZPD

3.1 Achievement of Learning Objectives and Motivation Linked: Assessment

Within the practical framework of a third level institution, achievement of learning objectives is inextricably linked to student assessment, even if in pedagogical terms these are not the same thing. The author has been involved in extensive peer discussion on the topic of summative vs formative work and student response (i.e. level of motivation) to each. In summary, many students have a tendency only to apply themselves to fully achieving learning objectives when it is presented through the medium of summative assessment. As such, the difficulties in assessment (including interim feedback) of collaborative learning should be considered during design of the preparatory material and scaffolding in order that students do not become demotivated and prejudiced against the process in future.

4 Conclusion

Collaborative learning represents an exciting tool for educators to provide students with an enriched learning environment. Grounded in social constructivism it is clear that peer-to-peer learning (including educators as peers) brings a level of connection and engagement with subject matter that students have not experienced with traditional style lecture teaching. This is true for both the more and less experienced members of the group. However, to avoid student disengagement with the process, lack of motivation and failure to achieve learning objectives, it is vital that each collaborative learning event is planned carefully, without over-prescribing the material and straying into the territory of transmission theory in a group setting.

5 References

Adler, M., & Toronto Board of Education (Ontario). Research, D. (Ontario). Research Dept. (1963). *Some Implications of the Theories of Jean Piaget and J. S. Bruner for Education*.

Bruffee, K. A. (1995). Sharing Our Toys: Cooperative Learning versus Collaborative Learning. *Change*, *27*(1), 12-18.

Bruffee, K. A. (1999). *Collaborative Learning: Higher Education, Interdependence, and the Authority of Knowledge. Second Edition*. Baltimore: Johns Hopkins University Press

Barkley, E.F., Cross, K.P. & Major, C.H. (2005) *Collaborative Learning Techniques*. San Francisco: Josey-Bass

Colbeck, C. L., Campbell, S. E., & Bjorklund, S. A. (2000). Grouping in the Dark: What College Students Learn from Group Projects. *Journal Of Higher Education*, *71*(1), 60-83.

Gillespie, D. F., Rosamond, S., & Thomas, E. (2006). Grouped Out? Undergraduates' Default Strategies for Participating in Multiple Small Groups. *Journal Of General Education*, *55*(2), 81-102.

King, A. (1993) Sage on the Stage to Guide on the Side. *College Teaching*, 41(1), 30-35

Kroll, L. R., & LaBoskey, V. K. (1996). Practicing What We Preach: Constructivism in a Teacher Education Program. *Action In Teacher Education*, *18*(2), 63-72.

Smyth J. (1996). *Developing socially critical educators*. In D Boud & N Miller (eds), *Working with experience: Animating learning*. London: Routledge, 41-57

Stone, A. (1998) The Metaphor of Scaffolding: Its Utility for the Field of Learning Disabilities. *Journal of Learning Disabilities,* 3 (4), 344-364

UCD (n.d.) *Open Educational Resources of UCD Teaching and Learning*, *University College Dublin.* Retrieved from:
http://www.ucdoer.ie/index.php/Education_Theory/Constructivism_and_Social_Constructivism

Verenikina, I. (2003) *Understanding Scaffolding and the ZPD in Educational Research*, Proceedings of the International Education Research Conference (AARE - NZARE), 30 November - 3 December 2003, Auckland, New Zealand.

Vygotsky, L. S. (2016). Play and Its Role in the Mental Development of the Child. *International Research In Early Childhood Education*, *7*(2), 3-25.

Wright, J.C., Millar, S.B., Kosciuk, S.A., Penberthy, D., Williams, P.H., & Wampold, B.E. (1998) A novel strategy for assessing the effects of curriculum reform on student competence. *The Journal of Chemical Education*, 75(August), 986-992